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AUTHOR	Levin, Joel R.; Guttmann, Joseph
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ABSTRACT

In a recent experiment it was discovered that although many children learn uniformly well (or poorly) from pictures and words, others learn appreciably better from pictures. The present study rules out an alternative explanation of those data--which had been produced on a single learning task containing both pictures and words--by obtaining predictably different "learner type" profiles under independently administered picture- and word-learning tasks. (Author)

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Technical Report No. 300

STRATEGIES IN READING COMPREHENSION: INDIVIDUAL DIFFERENCES IN LEARNING FROM PICTURES AND WORDS (A FOOTNOTE)

by

Joel R. Levin and Joseph Guttmann

Report from the Project on Conditions of School Learning and Instructional Strategies

Wisconsin Research and Development
Center for Cognitive Learning
The University of Wisconsin
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Statement of Focus

Individually Guided Education (IGE) is a new comprehensive system of elementary education. The following components of the IGE system are in varying stages of development and implementation: a new organization for instruction and related administrative arrangements; a model of instructional programing for the individual student; and curriculum components in prereading, reading, mathematics, motivation, and environmental education. The development of other curriculum components, of a system for managing instruction by computer, and of instructional strategies is needed to complete the system. Continuing programmatic research is required to provide a sound knowledge base for the components under development and for improved second generation components. Finally, systematic implementation is essential so that the products will function properly in the IGE schools.

The Center plans and carries out the research, development, and implementation components of its IGE program in this sequence: (1) identify the needs and delimit the component problem area; (2) assess the possible constraints—financial resources and availability of staff; (3) formulate general plans and specific procedures for solving the problems; (4) secure and allocate human and material resources to carry out the plans; (5) provide for effective communication among personnel and efficient management of activities and resources; and (6) evaluate the effectiveness of each activity and its contribution to the total program and correct any difficulties through feedback mechanisms and appropriate management techniques.

A self-renewing system of elementary education is projected in each participating elementary school, i.e., one which is less dependent on external sources for direction and is more responsive to the needs of the children attending each particular school. In the IGE schools, Center-developed and other curriculum products compatible with the Center's instructional programing model will lead to higher student achievement and self-direction in learning and in conduct and also to higher morale and job satisfaction among educational personnel. Each developmental product makes its unique contribution to IGE as it is implemented in the schools. The various research components add to the knowledge of Center practitioners, developers, and theorists.

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Abstract

In a recent experiment it was discovered that although many children learn uniformly well (or poorly) from pictures and words, others learn appreciably better from pictures. The present study rules out an alternative explanation of those data--which had been produced on a single learning task containing both pictures and words--by obtaining predictably different "learner type" profiles under independently administered picture- and word-learning tasks.

The present note resolves a potential interpretive problem associated with some recent data focusing on individual differences in learning from pictures and words (Levin, Divine-Hawkins, & Kerst, 1973). In that study, a sample of fourth-grade children was administered a 16-item paired-associate list. Included in the list were 8 pairs of pictures and 8 pairs of words. On the basis of their learning performance (over three trials) children were classified as being one of three types: subjects whose scores were relatively high (in comparison to their peers) on both picture and word pairs (Hi P, Hi W); subjects whose scores were relatively low on both picture and word pairs (Lo P, Lo W); and subjects whose scores were relatively high on picture pairs but relatively low on word pairs (Hi P, Lo W).[1]

The latter subjects were of especial interest, in that when words were presented for learning their performance closely resembled that of Lo P, Lo W subjects; whereas when pictures were presented for learning their performance approximated that of Hi P, Hi W subjects. This was true for these subjects not just on the initial classification instrument (Form A), but on a parallel form of the task administered the following day (Form B). We chose to interpret the existence of such (apparently stable) classifications as follows: certain children (in this case, Hi P, Lo W subjects) have differential abilities to learn from pictures and words, and for such children the mode in which materials are presented will largely determine whether or not they will learn effectively.

However, because of the unique mixed-list nature of the learning task employed by Levin et al., an alternative interpretation seems reasonable. Rather than explaining the results in terms of individual difference-related "learner types," it is possible to explain them in terms of individual difference-related "learning styles." In particular, when both pictures and words are presented in a single list, the contrast produced enables subjects to attend to one class of materials (pictures) at the expense of the other (words). Consequently, the high picture learning of Hi P, Lo W subjects may have resulted simply from an unequal division of attention between the two classes of material. The present experiment was conducted to evaluate this possibility.

Our subjects consisted of sixth graders from a semi-rural Wisconsin community. Following the procedures of Levin et al., we administered Form A of the learning task as a 16-pair mixed list which contained both picture and word pairs; and, as previously, on the basis of the children's performance we were able to identify Hi P, Hi W subjects, Lo P, Lo W subjects, and Hi P, Lo W subjects. As expected, even though the performance of these latter children was closer to that of Hi P, Hi W subjects on the picture pairs, it was closer to that of Lo P, Lo W subjects on the word pairs.

On the following day, the children were administered a second learning task which differed from that of Levin et al.'s second task in one important respect: whereas the earlier study utilized a parallel form of the mixed list classification instrument,

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[1] Although it is technically possible to obtain Lo P, Hi W classifications, as was pointed out by Levin et al., such subjects are not in sufficient numbers to include in a meaningful analysis. The four discovered in the present study, however, did perform in the anticipated manner on the second day.

we constructed homogeneous (picture or word) lists incorporating the same paired members. Thus, about half of the children (two classrooms) received a list of 16 picture pairs on the second day, and the others (two classrooms) received a complementary list of 16 word pairs. If the alternative ("learning style") explanation of our initial results is valid, then with no opportunity for Hi P, Lo W subjects to divide their attention unequally between pictures and words (since subjects received a list containing only one class of materials), differential performance profiles would not be expected on the two list types. On the other hand, our original ("learner type") explanation would have the Hi P, Lo W subjects performing either well or poorly, depending on whether they were administered either the picture or the word list respectively.

As evidenced in Figure 1, when word pairs were presented, both Hi P, Lo W, and Lo P, Lo W subjects did very poorly; however, when picture pairs were presented the performance of Hi P, Lo W subjects improved dramatically, while the performance of Hi P, Lo W subjects was not materially affected. This pattern of results is in complete accord with the aptitude-by-treatment-interaction model initially proposed by Levin (1972).

In summary, given that the differential profiles of Figure 1 were obtained on independent homogeneous lists, a "learning style" interpretation of the Levin et al. data must be rejected. Until proven otherwise, our original "learner type" interpretation of those data still lives.

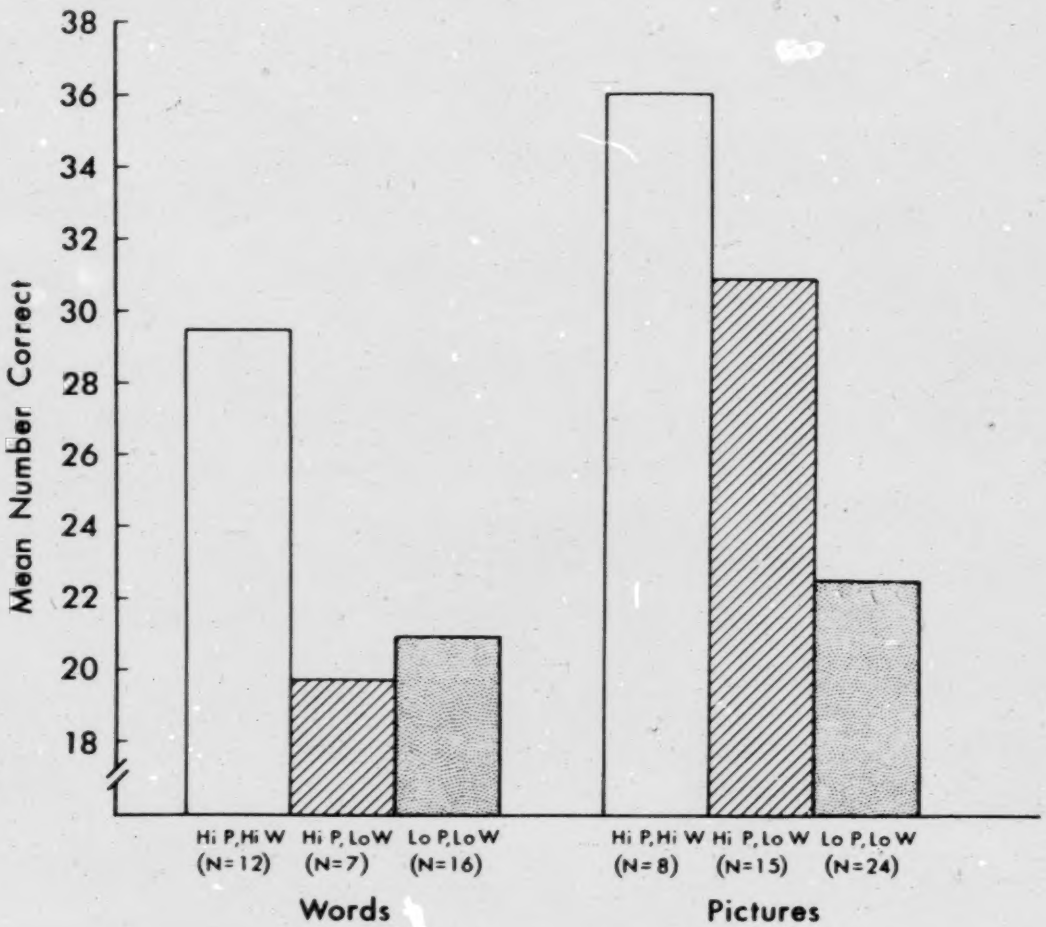

Figure 1. Mean number of correct responses by the three learner types on the homogeneous word and picture lists of the second day (maximum = 48).

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